STATEMENT OF CONSIDERATIONS

ADVANCE WAIVER OF THE GOVERNMENT'S U.S. AND FOREIGN PATENT RIGHTS TO INVENTIONS MADE BY PLUG POWER, INC. IN THE PERFORMANCE OF SUBCONTRACT NO. 80-348; DOE WAIVER NO. W(A)- 00-008 ; SAN 684

The Petitioner, Plug Power Inc., has submitted a petition for an advance waiver of the U.S. Government's domestic and foreign rights to subject inventions made during performance of the above cited subcontract under DOE Cooperative Agreement No. DE-FC08-99NV13578.

Background

Under the authority of Section 2026 of the Energy Policy Act of 1992, Public Law 102-486, and Title I, Section 103 of the Hydrogen Future Act of 1996, Public Law 104-271, the U.S. Department of Energy Nevada Operations Office (DOE-NV) solicited applications for the cost-shared development and validation of an integrated hydrogen reformer technology, 50 kw proton exchange membrane (PEM) fuel cell electrical generating system and vehicle refueling station. The vehicle refueling system will be multipurpose and capable of dispensing hydrogen, hydrogen enriched natural gas, and compressed natural gas. DOE anticipates that, through this cooperative agreement, commercial fuel cell power generation and vehicle refueling system designs will evolve, reformer design integration issues will be resolved, and operational experience will be gained.

The specific goals of this cooperative agreement are to : 1) demonstrate and resolve design issues associated with small scale, on-site, hydrogen production technologies that are capable of satisfying fuel cell requirements and the hydrogen needed for hydrogen and hydrogen enriched natural gas fuels in transportation systems applications; 2) design, construct, and operate a state-of-the-art mixed refueling station with sufficient capacity, storage, and pressurization capabilities to meet the needs of advanced transportation systems which ultimately will serve as a link in a national hydrogen corridor; 3) design, construct, and operate a reliable fuel cell power generating system for distributed power applications; and 4) demonstrate, test, and certify the integrated power generation and vehicle refueling designs.

PEM fuel cells were identified for this demonstration because of their performance potential for meeting technical, economic, safety, and environmental demands of the commercial sector. The development status of distributed hydrogen reformer technologies based on the use of natural gas and water as feedstocks are also considered sufficiently advanced that they can be considered as an on-site production source for use in fuel cells and hydrogen enriched natural gas for vehicle applications. It is recognized, however, that reformers of the size required for this application are not commonly available. Thus, demonstrations of these technologies are needed in an operating environment to resolve concerns associated with the size of these units, siting, regulatory matters, and operating procedures.

The solicitation, issued by DOE's Nevada Operations Office on 13 March 1999, required a minimum cost sharing commitment of fifty (50) percent. Applicants underwent a comprehensive technical evaluation using peer review in accordance with criteria published in the referenced solicitation. The technical evaluation criteria were weighted as significantly more important than the business evaluation criteria and cost. The proposal submitted by Air Products and Chemicals, Inc. (APCI) and its project team, comprised of Plug Power Inc (PPI) and City of Las Vegas, was determined to best achieve the objectives and goals described in the solicitation. The Cooperative Agreement No. DE-FC08-99NV13578, which was awarded to APCI on 1 October 1999 and is scheduled to be completed on 30 September 2004, has a total estimated project cost of $10.88 million dollars. The total amount of the subject Subcontract No. 80-348, awarded to Plug Power by APCI, is $3,663,513. Through the prime cooperative agreement award, DOE will provide funding of $1,831,756 to Plug Power and PPI will contribute the balance of funding required in the matching amount of $1,831,757 under their subcontract with APCI.

The Petitioner, Plug Power Inc, began as a limited liability company in June of 1997 as a joint venture between Edison Development Company (a subsidiary of DTE Energy Company and a parent company of Michigan's largest utility) and Mechanical Technology Inc. (MTI, an early developer of PEM fuel cell technologies). In early November 1999, Plug Power LLC became Plug Power Inc, a publicly traded company. Since its founding, Plug Power has grown from twenty-one employees to over three hundred. To the best of their knowledge, Plug Power is currently the largest PEM fuel cell manufacturing company in the United States. PPI remains committed to the development of fuel cells systems for automotive and stationary applications and is a recognized leader in PEM fuel cell technology.

Analysis

The Petitioner currently has numerous technology development programs underway in the field of PEM fuel cell systems and many others in the testing phase at major operating plants. In late 1999, Plug Power completed construction of a 51,000 square foot manufacturing facility bringing its total plant capacity to over 135,000 square feet. PPI currently plans continued expansion through the mass manufacturing of commercial fuel cell units as necessary to meet the near term production and R&D requirements for the year 2000 and beyond. Since the formation of Plug Power, on June 27, 1997, through September 30, 1999, the Petitioner has spent approximately $60 million related to the advancement of PEM fuel cell technology. Substantially all of this amount has been spent on fuel cell related research projects and capital expenditures to support those projects. The results achieved under these programs combined with continuing efforts under them have a direct application to the work being performed under the present subcontract.

The Petitioner has a substantial investment in its patent portfolio and has demonstrated a commitment to the development and commercialization of PEM fuel cell technology. In the past year alone, Plug Power has received 9 U.S. patents and has filed over 40 additional patent applications relating to PEM fuel cell technology. Based upon its current rate of development, PPI estimates that it will have over 100 patents issued or pending by July of 2000. Plug Power

applications relating to PEM fuel cell technology. Based upon its current rate of development, PPI estimates that it will have over 100 patents issued or pending by July of 2000. Plug Power has participated in numerous federal and state development programs relating to fuel cell technology. As evidenced by the partial list of PPI's federal contracts provided in response to question 11 of their attached petition, Plug Power continues to expand and develop an already broad research and development program with specific emphasis on PEM fuel cell technology. In all of those referenced federal contracts, the Government has granted the Petitioner an advance waiver of patent rights in order to encourage commercialization and further development of the respective fuel cell technologies. It also should be noted that, the prime awardee and team leader for this project, Air Products and Chemicals Inc, has already been granted an advance waiver No. W(A)-99-022 from DOE under Cooperative Agreement No. DE-FC08-99NV13578.

Scope of Waiver

It is the purpose of this advance waiver to provide for a waiver of the Government's domestic and foreign patent rights under the authority of 42 USC 2182 and 5908, in accordance with DOE's patent waiver regulations at 10 CFR 784.4. In particular, the scope of this advance waiver is directed to those inventions conceived or first actually reduced to practice by the employees of Plug Power in the course of its development and demonstration project under the aforementioned cooperative agreement. It is also an object of this advance waiver that the Petitioner, which initially executed the cooperative agreement containing the clause at 48 CFR 952.227-13, be able to retain the patent rights to their sole or joint (undivided) subject inventions in accordance with the terms and conditions set forth in 48 CFR 52.227-12 as amended by 10 CFR 784.12. This waiver is subject to DOE's retention of a royalty-free, non-transferable, irrevocable, nonexclusive license to practice any subject invention by or on behalf of the U.S. Government anywhere in the world, march-in rights and a U.S. preference provision comparable to those set forth in 35 U.S.C. 202 and 204. In addition, the attached U.S. Competitiveness provision will be included in the Patent Rights-Waiver clause per DOE policy. Lastly, Plug Power has agreed to third party licensing of background data in accordance with 48 CFR 952.227-14 Alternate VI.

Conclusions and Recommendation

A class waiver of the scope described hereinabove would promote the commercial utilization of inventions arising from this demonstration project by facilitating transfer of invention rights from the Government to the interested private sector participant, thereby making benefits of the PEM fuel technology widely available to the public in the shortest practicable time. Plug Power has developed an extensive and growing network of industry relationships that will allow them to efficiently commercialize any new fuel cell development such as may occur under this project. Again, the Petitioner has spent more than $60 million over the past three years in support of the development of PEM fuel cell technology. On page 7 of its attached petition, Plug Power states that "the availability of patent rights has indeed encouraged the incorporation of such tecnologies into our existing commercialization efforts, and has thus furthered the technical and commercial achievements attributable to the (se federal) contracts. Morever, the existence of patent rights has

made our developments under these contracts much more valuable to us, and has thus provided an incentive for us to continue development and refinement of these technologies even after sponsorship by the Government has expired ." Hence, grant of this advance waiver will serve to encourage participation in the DOE Program by providing assurance that statutory Government ownership of inventions will not inhibit private industry commercialization plans.

Grant of this class waiver should not result in adverse effects on competition or market concentration since the DOE Program is directed to a multiplicity of projects, each of which is generally directed toward advancing the state of alternate fuel technology, with an objective of maintaining a competitive position in overseas markets and a future domestic market. The Petitioner is working to demonstrate a specific approach that meets the stated project objectives. PPI points out that, because the fuel cell technology has been known for so long, modern improvements are typically in the form of small improvements, not pioneering break-through technology that would block the industry from other alternatives that may be developed. Thus, it is highly unlikely that the acquisition of the patent rights requested would place the Petitioner in a preferred or dominant position in this field. Although certain generated technical information may be protected from public disclosure for a period of up to five years under 42 USC 13541(d), Plug Power has indicated that they intend to "actively seek licensing of its technologies and so it is believed that the patent rights requested would result in large scale dissemination of the technology developed under the (sub)contract." Accordingly, this waiver is viewed as having a limited effect on competition. On balance, the allocation of invention rights fostered by this advance waiver should serve to enhance competition by encouraging the development of new or improved technologies which will expedite the attainment of the purposes of the Program. Thus, the statutory objectives of DOE's waiver policy are being met.

Accordingly, in view of the statutory purposes of DOE wavier policy, and the objectives of the Hydrogen Future Act, and in view of the factors to be considered under DOE's statutory patent waiver policy, all of which have been considered, it is recommended that this class waiver as set forth will best serve the interest of the United States and the general public. It is therefore recommended that the wavier be granted.

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(2) Attachments

Based on the forgoing Statement of Considerations, it is determined that the interest of the United States and the general public will best be served by waiver of United States and foreign patent rights, and therefore the waiver is granted. This waiver shall not affect any patent waiver previously granted.

CONCURRENCE:

Sigmund Gronich (Acting)
for Robert H. Brewer, Director
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Systems, EE-15

APPROVAL:

P L Gottlieb
Paul Gottlieb, Assistant General Counsel
for Technology Transfer and
Intellectual Property, GC-62

U.S. COMPETITIVENESS

The Contractor agrees that any products embodying any waived invention or produced through the use of any waived invention will be manufactured substantially in the United States, unless the Contractor can show to the satisfaction of DOE that it is not commercially feasible to do so. In the event DOE agrees to foreign manufacture, there will be a requirement that the Government's support of the technology be recognized in some appropriate manner, e.g., recoupment of the Government's investment, etc. The Contractor further agrees to make the above condition binding on any assignee or licensee or any entity otherwise acquiring rights to any waived invention including subsequent assignees or licensees. Should the Contractor or other such entity receiving rights in any waived invention undergo a change in ownership amounting to a controlling interest, then the waiver, assignment, license, or other transfer of rights in any waived invention is suspended until approved in writing by DOE.